What is claimed is:

CLAIMS

1 1.   A method for routing a source routed packet to an SRB subnet for a destination

2 station, comprising:

3   maintaining an address resolution protocol table (ARP table) in a router having an

4 entry for each station on said SRB subnet to which said router routes packets, said entry

5 having a first field containing a Layer 3 address of said station, said entry having a

6 second field containing a Layer 2 address of said station including a physical (MAC)

7 address and routing information (RIF information) from said router to said each station;

8   writing said routing information read from said second field of said ARP table

9 into a RIF in a message packet before routing said message packet to said SRB subnet for

10 said destination station.

1 2.   The method as in claim 1 further comprising:

2   populating said routing information in said ARP table by reading RIF information

3 from a field of an All Routes Explorer (ARE) packet, either a request or response packet.

1 3.   The method as in claim 1 further comprising:

2   populating said routing information in said ARP table by reading RIF information

3 from a field of an Single Routes Explorer (SRE) packet, either a request or response

4 packet.
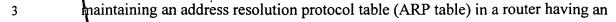
1 4.   The method as in claim 1 further comprising:

2   populating said routing information in said ARP table by reading RIF information

3 from a field of an ARP Explorer packet, either a request or response packet.

1 5.   The method as in claim 1 further comprising: updating said second field of said

2 ARP table when said router receives an ARP Explorer request packet from a station on

3 said SRB subnet and said packet contains RIF information.

1 6.   The method as in claim 1 further comprising: transmitting an ARP Explorer

2 request packet upon expiration of an ARP table flush timer, and updating said second

3 field of said ARP table in response to receipt of an ARP Explorer response packet

4 transmitted by a station in response to said ARP Explorer request packet.

1 7.   The method as in claim 6 further comprising: choosing a time period of four (4)

2 hours for expiration of said ARP table flush timer.

1 8.   The method as in claim 1 further comprising: transmitting a validation frame

2 upon expiration of a validation time interval, and in the absence of a response from said

3 validation frame, transmitting an ARP Explorer request packet, and updating said second

4 field of said ARP table in response to receipt of an ARP Explorer response packet

5 transmitted by a station in response to said ARP Explorer request packet.

1 9. The method of claim 8 further comprising: choosing a validation time interval of 15

2 seconds.

1 10. A router comprising:

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2   an address resolution protocol table (ARP table), said ARP table maintained in

3   said router, said ARP table having an entry for each station on a SRB subnet to which

4   said router routes packets, said entry having a first field containing a Layer 3 address of

5   said station, said entry having a second field containing a Layer 2 address of said station

6   including a physical (MAC) address and routing information (RIF information) from said

7   router to said each station;

8   a packet format circuit to write required routing information read from said

9   second field of said ARP table into a RIF in a message packet before routing said

10 message packet to a destination station on a destination SRB subnet.

1   11. A router for routing a source routed packet to an SRB subnet for a destination,

2   comprising:

3   means for maintaining an address resolution protocol table (ARP table) in a router

4   having an entry for each station on said SRB subnet to which said router routes packets,

5   said entry having a first field containing a Layer 3 address of said station, said entry

6   having a second field containing a Layer 2 address of said station including a physical

7   (MAC) address and routing information (RIF information) from said router to said each

8   station;

9   means for writing said routing information read from said second field of said

10 ARP table into a RIF in a message packet before routing said message packet to said SRB

11 subnet for said destination station.

1   12. A computer readable device containing a computer program for performing a method

2   of routing a source routed packet to an SRB subnet for a destination station, comprising:

3   maintaining an address resolution protocol table (ARP table) in a router having an

4   entry for each station on said SRB subnet to which said router routes packets, said entry

5   having a first field containing a Layer 3 address of said station, said entry having a

6   second field containing a Layer 2 address of said station including a physical (MAC)

7   address and routing information (RIF information) from said router to said each station;

8   writing said routing information read from said second field of said ARP table

9   into a RIF in a message packet before routing said message packet to said SRB subnet for

10   said destination station.

13. Electronic data signals received through a port of a router, said electronic data signals

2   for implementing a method for routing a source routed packet to an SRB subnet for a

3   destination station, comprising:

4   maintaining an address resolution protocol table (ARP table) in a router having an

5   entry for each station on said SRB subnet to which said router routes packets, said entry

6   having a first field containing a Layer 3 address of said station, said entry having a

7   second field containing a Layer 2 address of said station including a physical (MAC)

8   address and routing information (RIF information) from said router to said each station;

9   writing said routing information read from said second field of said ARP table

10   into a RIF in a message packet before routing said message packet to said SRB subnet for

11   said destination station.

1   14. An ARP table data structure stored in a computer memory of a router, comprising:

2   an entry for each station on an SRB subnet to which said router routes packets,

3   said entry having a first field containing a Layer 3 address of each said station, said entry

4   having a second field containing a Layer 2 address of said station including a physical

5   (MAC) address and routing information (RIF information) from said router to said each

6   station, said routing information in said second field of said ARP table used for writing

7   RIF information into a RIF in a message packet before routing said message packet to

8   said SRB subnet for said each station.

1   15. The ARP table of claim 1 or claim 10, or claim 11, or claim 12, or claim 13, or claim

2   14 wherein said Layer 3 address further comprises: an address for an Internet Protocol

3   (IP) communication session.

1   16. The ARP table of claim 1 or claim 10, or claim 11, or claim 12, or claim 13, or claim

2   14 wherein said Layer 3 address further comprises: an address for an Appletalk

3   communication session.

1   17. The ARP table of claim 1 or claim 10, or claim 11, or claim 12, or claim 13, or claim

2   14 wherein said Layer 3 address further comprises: an address for a connectionless mode

3   network service communication session.

1   18. The ARP table of claim 1 or claim 10, or claim 11, or claim 12, or claim 13, or claim

2   14 wherein said Layer 3 address further comprises: an address for a DECnet

3   communication session.

1 19. The ARP table of claim 1 or claim 10, or claim 11, or claim 12, or claim 13, or claim

2 14 wherein said Layer 3 address further comprises: an address for an IPX

3 communication session.

1 20. The ARP table of claim 1 or claim 10, or claim 11, or claim 12, or claim 13, or claim

2 14 wherein said Layer 3 address further comprises: an address for a XNS communication

3 session.

1 21. The ARP table of claim 1 or claim 10, or claim 11, or claim 12, or claim 13, or claim

2 14 wherein said Layer 3 address further comprises: an address for a Vines

3 communication session.

1 22. The method of claim 1 or claim 12, or claim 13, further comprising: receiving data

2 by a processor, said data received from a network connection for maintaining said ARP

3 table, and storing said data in a FLASH memory.

1 23. The router of claim 10 or claim 11, or claim 14, further comprising: a processor

2 receiving data from a network connection, said data received from a network connection

3 for maintaining said ARP table, and storing said data in a FLASH memory.